

TABLE OF CONTENTS

CHAPTER 1 - FAR 21 CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS

		Page No.
AC 21.16	Special Conditions	FAR 21-1
AC 21.31	Type Design	FAR 21-2
AC 21.33	Inspection and Tests.....	FAR 21-2
AC 21.35	Flight Tests.....	FAR 21-2
AC 21.39	Flight Test Instrument Calibration	FAR 21-6
	and Correction Report	

CHAPTER 2 - FAR 27 AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

SUBPART A - GENERAL

GENERAL

AC 27.1	Applicability.....	A-1
AC 27.1A	Applicability.....	A-1
AC 27.1B	Applicability.....	A-2
AC 27.2	Special Retroactive Requirements	A-2
AC 27.2A	Special Retroactive Requirements	A-4

SUBPART B - FLIGHT

GENERAL

AC 27.21	Proof of Compliance	B-1
AC 27.25	Weight Limits.....	B-3
AC 27.27	Center of Gravity Limits	B-4
AC 27.29	Empty Weight and Corresponding Center of Gravity	B-6
AC 27.31	Removable Ballast.....	B-7
AC 27.33	Main Rotor Speed and Pitch Limits.....	B-7

PERFORMANCE

AC 27.45	Performance - General	B-9
AC 27.45A	General.....	B-18
AC 27.45B	General.....	B-18
AC 27.51	Takeoff	B-25

SUBPART B - FLIGHT (continued)**PERFORMANCE (continued)**

	Page No.
AC 27.65 Climb: All Engines Operating.....	B-26
AC 27.65A Climb: All Engines Operating.....	B-28
AC 27.67 Climb: One Engine Inoperative.....	B-28
AC 27.71 Glide Performance	B-29
AC 27.73 Performance at Minimum Operating Speed	B-32
AC 27.75 Landing	B-34
AC 27.79 Limiting Height - Speed Envelope	B-37
AC 27.79A Limiting Height - Speed Envelope	B-45

FLIGHT CHARACTERISTICS

AC 27.141 Flight Characteristics - General.....	B-46
AC 27.143 Controllability and Maneuverability	B-47
AC 27.151 Flight Controls	B-52
AC 27.161 Trim Control	B-53
AC 27.171 Stability: General.....	B-53
AC 27.173 Static Longitudinal Stability.....	B-54
AC 27.175 Demonstration of Static Longitudinal Stability.....	B-55
AC 27.177 Static Directional Stability.....	B-59

GROUND AND WATER HANDLING CHARACTERISTICS

AC 27.231 Ground and Water Handling Characteristics - General	B-61
AC 27.235 Taxiing Condition	B-61
AC 27.239 Spray Characteristics	B-62
AC 27.241 Ground Resonance	B-63

MISCELLANEOUS FLIGHT REQUIREMENTS

AC 27.251 Vibration.....	B-68
--------------------------	------

SUBPART C - STRENGTH REQUIREMENTS**GENERAL**

AC 27.301 Loads	C-1
AC 27.303 Factor of Safety.....	C-1

SUBPART C - STRENGTH REQUIREMENTS (continued)**GENERAL (continued)**

Page No.

AC 27.305	Strength and Deformation.....	C-2
AC 27.307	Proof of Structure	C-2
AC 27.307A	Proof of Structure	C-3
AC 27.309	Design Limitations	C-4

FLIGHT LOADS

AC 27.321	Flight Loads - General	C-5
AC 27.337	Limit Maneuvering Load Factor.....	C-5
AC 27.339	Resultant Limit Maneuvering Loads	C-8
AC 27.341	Gust Loads	C-8
AC 27.351	Yawing Conditions	C-9
AC 27.361	Engine Torque	C-13

CONTROL SURFACE AND SYSTEM LOADS

AC 27.391	Control Surface and System Loads - General.....	C-15
AC 27.391A	Control Surface and System Loads - General.....	C-15
AC 27.395	Control System	C-15
AC 27.395A	Control System	C-17
AC 27.397	Limit Pilot Forces and Torques	C-17
AC 27.399	Dual Control System.....	C-18
AC 27.401	Auxiliary Rotor Assemblies	C-18
AC 27.401A	Auxiliary Rotor Assemblies	C-20
AC 27.403	Auxiliary Rotor Attachment Structure	C-20
AC 27.403A	Auxiliary Rotor Attachment Structure	C-21
AC 27.411	Ground Clearance: Tail Rotor Guard	C-21
AC 27.413	Stabilizing and Control Surfaces	C-22
AC 27.413A	Stabilizing and Control Surfaces	C-24
AC 27.427	Unsymmetrical Loads	C-24

GROUND LOADS

AC 27.471	Ground Loads - General	C-28
AC 27.473	Ground Loading Conditions and Assumptions	C-28
AC 27.475	Tires and Shock Absorbers	C-29
AC 27.477	Landing Gear Arrangement	C-29
AC 27.479	Level Landing Conditions.....	C-29

SUBPART C - STRENGTH REQUIREMENTS(continued)**GROUND LOADS (continued)**

	Page No.
AC 27.481 Tail-Down Landing Conditions.....	C-30
AC 27.483 One-Wheel Landing Conditions	C-31
AC 27.485 Lateral Drift Landing Conditions	C-31
AC 27.493 Braked Roll Conditions.....	C-32
AC 27.497 Ground Loading Conditions:	C-32
Landing Gear With Tail Wheels	
AC 27.501 Ground Loading Conditions:.....	C-34
Landing Gear With Skids	
AC 27.501A Ground Loading Conditions:.....	C-35
Landing Gear With Skids	
AC 27.505 Ski Landing Conditions.....	C-35

WATER LOADS

AC 27.521 Float Landing Conditions.....	C-37
---	------

MAIN COMPONENT REQUIREMENTS

AC 27.547 Main Rotor Structure	C-38
AC 27.549 Fuselage, Landing Gear, and Rotor Pylon Structure	C-38

EMERGENCY LANDING CONDITIONS

AC 27.561 Emergency Landing Conditions - General.....	C-40
AC 27.561A Emergency Landing Conditions - General.....	C-41
AC 27.561B Emergency Landing Conditions - General.....	C-42
AC 27.561C Emergency Landing Conditions - General.....	C-43
AC 27.562 Emergency Landing Dynamic Conditions	C-43
AC 27.563 Structural Ditching Provisions.....	C-44
AC 27.563A Structural Ditching Provisions.....	C-44

FATIGUE EVALUATION

AC 27.571 Fatigue Evaluation of Flight Structure	C-46
AC 27.571A Fatigue Evaluation of Flight Structure for Category A Certification	C-49

SUBPART D - DESIGN AND CONSTRUCTION**GENERAL**

Page No.

AC 27.601	Design	D-1
AC 27.602	Critical Parts	D-2
AC 27.603	Materials	D-3
AC 27.605	Fabrication Methods	D-4
AC 27.607	Fasteners	D-4
AC 27.609	Protection of Structure	D-5
AC 27.610	Lightning Protection	D-6
AC 27.611	Inspection Provisions	D-8
AC 27.613	Material Strength Properties	D-9
	and Design Values	
AC 27.613A	Material Strength Properties	D-11
	and Design Values	
AC 27.619	Special Factors	D-11
AC 27.621	Casting Factors	D-12
AC 27.623	Bearing Factors	D-22
AC 27.625	Fitting Factors	D-23
AC 27.629	Flutter	D-24

ROTORS

AC 27.653	Pressure Venting and Drainage of Rotor Blades	D-26
AC 27.659	Mass Balance	D-26
AC 27.661	Rotor Blade Clearance	D-26
AC 27.663	Ground Resonance Prevention Means	D-28
AC 27.663A	Ground Resonance Prevention Means	D-30

CONTROL SYSTEMS

AC 27.671	Control Systems - General.....	D-31
AC 27.672	Stability Augmentation, Automatic,	D-31
	and Power-Operated Systems	
AC 27.673	Primary Flight Control	D-32
AC 27.674	Interconnected Controls.....	D-32
AC 27.675	Stops	D-33
AC 27.679	Control System Locks.....	D-34
AC 27.681	Limit Load Static Tests	D-35
AC 27.683	Operation Tests	D-35
AC 27.685	Control System Details	D-36
AC 27.685A	Control System Details	D-37
AC 27.687	Spring Devices	D-37
AC 27.691	Autorotation Control Mechanism.....	D-38
AC 27.695	Power Boost and Power-Operated Control System	D-39

SUBPART D - DESIGN AND CONSTRUCTION (continued)

	Page No.
<u>LANDING GEAR</u>	
AC 27.723 Shock Absorption Tests	D-42
AC 27.725 Limit Drop Test.....	D-45
AC 27.727 Reserve Energy Absorption Drop Test	D-45
AC 27.727A Reserve Energy Absorption Drop Test	D-46
AC 27.729 Retracting Mechanism.....	D-46
AC 27.731 Wheels.....	D-49
AC 27.733 Tires	D-50
AC 27.735 Brakes.....	D-51
AC 27.737 Skis	D-53
<u>FLOATS AND HULLS</u>	
AC 27.751 Main Float Buoyancy	D-55
AC 27.753 Main Float Design	D-56
AC 27.755 Hulls	D-56
<u>PERSONNEL AND CARGO ACCOMMODATIONS</u>	
AC 27.771 Pilot Compartment	D-58
AC 27.773 Pilot Compartment View.....	D-59
AC 27.775 Windshields and Windows	D-64
AC 27.775A Windshields and Windows	D-64
AC 27.777 Cockpit Controls.....	D-64
AC 27.779 Motion and Effect of Cockpit Controls	D-65
AC 27.783 Doors	D-68
AC 27.783A Doors	D-70
AC 27.785 Seats, Berths, Safety Belts, and Harnesses.....	D-70
AC 27.785A Seats, Berths, Safety Belts, and Harnesses.....	D-74
AC 27.787 Cargo and Baggage Compartments.....	D-76
AC 27.787A Cargo and Baggage Compartments.....	D-77
AC 27.801 Ditching	D-78
AC 27.807 Emergency Exits	D-86
AC 27.807A Emergency Exits	D-87
AC 27.831 Ventilation	D-87
AC 27.833 Heaters	D-88
<u>FIRE PROTECTION</u>	
AC 27.853 Compartment Interiors	D-90
AC 27.855 Cargo and Baggage Compartments.....	D-91
AC 27.859 Heating Systems	D-92
AC 27.861 Fire Protection of Structure, Controls, and Other Parts	D-96
AC 27.861A Fire Protection of Structure, Controls, and Other Parts	D-98
AC 27.863 Flammable Fluid Fire Protection.....	D-99

SUBPART D - DESIGN AND CONSTRUCTION (continued)

Page No.

EXTERNAL LOAD ATTACHING MEANS

AC 27.865	External Load Attaching Means	D-101
AC 27.865A	External Load Attaching Means	D-102
AC 27.865B	External Load Attaching Means (SEE MG 12)	D-103

MISCELLANEOUS (DESIGN AND CONSTRUCTION)

AC 27.871	Leveling Marks	D-104
AC 27.873	Ballast Provisions	D-104

SUBPART E - POWERPLANT**GENERAL**

AC 27.901	Installation	E-1
AC 27.901A	Installation	E-5
AC 27.903	Engines	E-5
AC 27.903A	Engines	E-7
AC 27.907	Engine Vibration	E-9

ROTOR DRIVE SYSTEM

AC 27.917	Design	E-10
AC 27.921	Rotor Brake	E-11
AC 27.923	Rotor Drive System and Control Mechanism Tests.....	E-12
AC 27.923A	Rotor Drive System and Control Mechanism Tests.....	E-17
AC 27.923B	Rotor Drive System and Control Mechanism Tests.....	E-18
AC 27.927	Additional Tests	E-19
AC 27.927A	Additional Tests	E-21
AC 27.931	Shafting Critical Speeds	E-21
AC 27.935	Shafting Joints	E-26
AC 27.939	Turbine Engine Operating Characteristics	E-26

FUEL SYSTEM

AC 27.951	Fuel System - General.....	E-29
AC 27.952	Fuel System Crash Resistance.....	E-31
AC 27.953	Fuel System Independence	E-56
AC 27.954	Fuel System Lightning Protection	E-57
AC 27.955	Fuel Flow	E-58
AC 27.955A	Fuel Flow	E-62
AC 27.959	Unusable Fuel Supply.....	E-64
AC 27.961	Fuel System Hot Weather Operation	E-65

SUBPART E - POWERPLANT (continued)**FUEL SYSTEM (continued)**

	Page No.
AC 27.961A Fuel System Hot Weather Operation.....	E-67
AC 27.963 Fuel Tanks: General.....	E-67
AC 27.963A Fuel Tanks: General.....	E-68
AC 27.963B Fuel Tanks: General.....	E-68
AC 27.965 Fuel Tank Tests	E-69
AC 27.967 Fuel Tank Installation	E-70
AC 27.969 Fuel Tank Expansion Space.....	E-72
AC 27.969A Fuel Tank Expansion Space.....	E-72
AC 27.971 Fuel Tank Sump.....	E-73
AC 27.971A Fuel Tank Sump.....	E-74
AC 27.973 Fuel Tank Filler Connection.....	E-74
AC 27.973A Fuel Tank Filler Connection.....	E-75
AC 27.975 Fuel Tank Vents	E-76
AC 27.975A Fuel Tank Vents	E-77
AC 27.975B Fuel Tank Vents	E-77
AC 27.977 Fuel Tank Outlet.....	E-78

FUEL SYSTEM COMPONENTS

AC 27.991 Fuel Pumps.....	E-80
AC 27.991A Fuel Pumps.....	E-81
AC 27.993 Fuel System Lines and Fittings	E-81
AC 27.995 Fuel Valves	E-82
AC 27.997 Fuel Strainer or Filter.....	E-82
AC 27.997A Fuel Strainer or Filter.....	E-83
AC 27.999 Fuel System Drains	E-84
AC 27.999A Fuel System Drains	E-85

OIL SYSTEM

AC 27.1011 Oil System - General	E-86
AC 27.1013 Oil Tanks.....	E-86
AC 27.1015 Oil Tank Tests.....	E-87
AC 27.1017 Oil Lines and Fittings.....	E-88
AC 27.1019 Oil Strainer or Filter	E-88
AC 27.1019A Oil Strainer or Filter	E-89
AC 27.1021 Oil System Drains	E-90
AC 27.1027 Transmission and Gearboxes: General	E-90

SUBPART E - POWERPLANT (continued)

Page No.

COOLING

AC 27.1041	Cooling - General	E-92
AC 27.1041A	General.....	E-94
AC 27.1043	Cooling Tests.....	E-94
AC 27.1045	Cooling Test Procedures	E-97
AC 27.1045A	Cooling Test Procedures	E-98

INDUCTION SYSTEM

AC 27.1091	Air Induction.....	E-99
AC 27.1091A	Air Induction.....	E-100
AC 27.1093	Induction System Icing Protection.....	E-100
AC 27.1093A	Induction System Icing Protection.....	E-111

EXHAUST SYSTEM

AC 27.1121	General.....	E-113
AC 27.1123	Exhaust Piping.....	E-114

POWERPLANT CONTROLS AND ACCESSORIES

AC 27.1141	Powerplant Controls: General	E-117
AC 27.1141A	Powerplant Controls: General	E-118
AC 27.1143	Engine Controls	E-118
AC 27.1143A	Engine Controls	E-119
AC 27.1143B	Engine Controls	E-119
AC 27.1145	Ignition Switches.....	E-120
AC 27.1147	Mixture Controls.....	E-120
AC 27.1151	Rotor Brake Controls	E-121
AC 27.1163	Powerplant Accessories.....	E-122

POWERPLANT FIRE PROTECTION

AC 27.1183	Lines, Fittings, and Components	E-124
AC 27.1185	Flammable Fluids	E-125
AC 27.1187	Ventilation.....	E-126
AC 27.1189	Shutoff Means	E-127
AC 27.1191	Firewalls	E-128
AC 27.1193	Cowling and Engine Compartment Covering	E-132
AC 27.1193A	Cowling and Engine Compartment Covering	E-133
AC 27.1194	Other Surfaces	E-134
AC 27.1195	Fire Detector Systems	E-135

SUBPART F - EQUIPMENT

Page No.

GENERAL

AC 27.1301	Function and Installation	F-1
AC 27.1303	Flight and Navigation Instruments	F-1
AC 27.1305	Powerplant Instruments.....	F-2
AC 27.1305A	Powerplant Instruments.....	F-3
AC 27.1305B	Powerplant Instruments.....	F-3
AC 27.1307	Miscellaneous Equipment.....	F-6
AC 27.1309	Equipment, Systems, and Installations.....	F-7

INSTRUMENTS - INSTALLATION

AC 27.1321	Arrangement and Visibility.....	F-28
AC 27.1322	Warning, Caution, and Advisory Lights	F-28
AC 27.1323	Airspeed Indicating System.....	F-33
AC 27.1325	Static Pressure Systems	F-34
AC 27.1327	Magnetic Direction Indicator	F-35
AC 27.1329	Automatic Pilot System	F-35
AC 27.1335	Flight Director Systems	F-44
AC 27.1337	Powerplant Instruments.....	F-45
AC 27.1337A	Powerplant Instruments.....	F-46

ELECTRICAL SYSTEMS AND EQUIPMENT

AC 27.1351	Electrical Systems and Equipment - General	F-48
AC 27.1353	Storage Battery Design and Installation	F-52
AC 27.1357	Circuit Protective Devices.....	F-54
AC 27.1361	Master Switch.....	F-56
AC 27.1365	Electric Cables	F-56
AC 27.1367	Switches.....	F-57

LIGHTS

AC 27.1381	Instrument Lights.....	F-59
AC 27.1383	Landing Lights.....	F-59
AC 27.1385	Position Light System Installation.....	F-60
AC 27.1387	Position Light System Dihedral Angles	F-60
AC 27.1389	Position Light Distribution and Intensities	F-60
AC 27.1391	Minimum Intensities in the Horizontal	F-60
	Plane of Forward and Rear Position Lights	
AC 27.1393	Minimum Intensities in Any Vertical	F-60
	Plane of Forward and Rear Position Lights	

SUBPART F - EQUIPMENT (continued)**LIGHTS (continued)**

Page No.

AC 27.1395	Maximum Intensities In Overlapping Beams of Forward and Rear Position Lights	F-60
AC 27.1397	Color Specifications	F-60
AC 27.1399	Riding Light	F-60
AC 27.1401	Anti-collision Light System	F-62

SAFETY EQUIPMENT

AC 27.1411	General	F-63
AC 27.1413	Safety Belts	F-65
AC 27.1415	Ditching Equipment	F-66
AC 27.1419	Ice Protection	F-67

MISCELLANEOUS EQUIPMENT

AC 27.1435	Hydraulic Systems	F-85
AC 27.1457	Cockpit Voice Recorder	F-87
AC 27.1459	Flight Recorders	F-89
AC 27.1461	Equipment Containing High Energy Rotors	F-91

SUBPART G - OPERATING LIMITATIONS AND INFORMATION**OPERATING LIMITATIONS**

AC 27.1501	Operating Limitations - General	G-1
AC 27.1503	Airspeed Limitations: General	G-1
AC 27.1505	Never-Exceed Speed	G-4
AC 27.1509	Rotor Speed	G-6
AC 27.1519	Weight and Center of Gravity	G-8
AC 27.1521	Powerplant Limitations	G-8
AC 27.1521A	Powerplant Limitations	G-9
AC 27.1521B	Powerplant Limitations	G-10
AC 27.1523	Minimum Flightcrew	G-11
AC 27.1525	Kinds of Operations	G-15
AC 27.1527	Maximum Operating Altitude	G-15
AC 27.1529	Instructions for Continued Airworthiness (Maintenance Manual)	G-16
AC 27.1529A	Instructions for Continued Airworthiness (Maintenance Manual)	G-18

SUBPART G - OPERATING LIMITATIONS AND INFORMATION (continued)

Page No.

MARKINGS AND PLACARDS

AC 27.1541	Marking and Placards - General.....	G-20
AC 27.1543	Instrument Markings: General	G-20
AC 27.1545	Airspeed Indicator	G-24
AC 27.1547	Magnetic Direction Indicator	G-24
AC 27.1549	Powerplant Markings	G-24
AC 27.1549A	Powerplant Markings	G-25
AC 27.1551	Oil Quantity Indicators	G-25
AC 27.1553	Fuel Quantity Indicator	G-25
AC 27.1555	Control Markings	G-26
AC 27.1557	Miscellaneous Markings and Placards.....	G-27
AC 27.1559	Limitations Placard.....	G-29
AC 27.1561	Safety Equipment.....	G-30
AC 27.1565	Tail Rotor	G-31

ROTORCRAFT FLIGHT MANUAL

AC 27.1581	Rotorcraft Flight Manual - General	G-32
AC 27.1583	Operating Limitations	G-39
AC 27.1585	Operating Procedures	G-41
AC 27.1585A	Operating Procedures	G-43
AC 27.1587	Performance Information.....	G-44
AC 27.1589	Loading Information	G-46

CHAPTER 3 - MISCELLANEOUS GUIDANCE (MG), NORMAL CATEGORY ROTORCRAFT

AC 27 MG 1	Certification Procedure for Rotorcraft Avionics Equipment.....	MG 1-1
AC 27 MG 2	Standardized Test Procedure for Rotorcraft DC	MG 2-1
	Electrical System Tests	
AC 27 MG 3	Definition of Engine Isolation Features as Applied to	MG 3-1
	§§ 27.79(b)(2), 27.141(b)(1), and 27.143(d)(1)	
AC 27 MG 4	Full Authority Digital Electronic Controls (FADEC)	MG 4-1
AC 27 MG 5	Agricultural Dispensing Equipment Installation.....	MG 5-1
AC 27 MG 6	Emergency Medical Service (EMS) Systems, Installations,.....	MG 6-1
	Interior Arrangements, and Equipment	
AC 27 MG 7	Hour Meters or Time-in-Service Recording Devices in Rotorcraft	MG 7-1
AC 27 MG 8	Substantiation of Composite Rotorcraft Structure	MG 8-1
AC 27 MG 9	Rotorcraft One-Engine-Inoperative (OEI) Power Assurance	MG 9-1
AC 27 MG 10	Advisory Material for Substantiation of Emergency	MG 10-1
	Flotation System	
AC 27 MG 11	(reserved).....	MG 11-1
AC 27 MG 12	External Loads	MG 12-1
AC 27 Appendix A - (reserved) (<i>Instructions for Continued Airworthiness</i>)	Apdx A-1	
AC 27 Appendix B - Airworthiness Guidance for Rotorcraft Instrument Flight.....	Apdx B-1	
AC 27 Appendix C - (reserved) (<i>Criteria for Category A</i>).....	Apdx C-1	